1. General Course Information

1.1 Course Details

COURSE CODE	2814ICT
COURSE TITLE	Data Management
ACADEMIC ORGANISATION	ICT School of Information and Communication Technology
TRIMESTER	Trimester 1 2019
MODE	In Person
LEVEL	Undergraduate
LOCATION	Nathan, On Campus
CREDIT POINT VALUE	10

Course Description:

Information derived from data is important to the management, productivity and competitive advantage of an organisation. Data must be efficiently collected, organized, retrieved and managed to make it meaningful to the organisation. It is the role of the IT professional to develop, deploy, manage and integrate data and information systems to support the organisation. This course includes the organisation, modeling, transformation and presentation of data. Incompatible with 1804ICT.

1.2 Course Introduction

This course introduces the fundamental concepts and skills in data management. It focuses on the most widely used relational data model and introduces basic concepts and skills underlying a broad range of database technologies. As a student of this course, you will learn the fundamental concepts in relational databases and be able to apply the knowledge in data management. You will learn skills to produce an Entity Relationship Diagram (ERD) and to map it to a logical database schema. You will learn normalisation techniques and apply them in practical database design to remove data redundancies. You will also learn skills to implement databases and manipulate data through Structured Query Language (SQL), and will have the opportunity to apply such skills to produce relational databases and retrieve data from the databases using SQL statements.

Previous Student Feedback

"The course and assessment were nicely planned out."

"Learning the basics of databases all the way through to implementing them."

"I found that the course contained plenty of practical knowledge that I could apply in my future career. This was particularly true for the SQL part of the course, primarily queries. Although these were basic compared to what would be used in an actual organisation, the skills I learned will likely still be useful when learning the more complex parts in the future."

"The course is very useful. More activities on Entity-Relationship Diagram (ERD) and Structured Query Language (SQL) will be good."

"More collaborative and teamwork based work should be incorporated into the course. The workshops must be more engaging in order for students to attend, and not an individual task based where we are left to complete things without guidance or attention given."

In this trimester, the content will be delivered with more activities and examples. In addition, more collaborative and teamwork based activities will be considered.

1.3 Course Staff

Primary Convenor **APro John Wang**	
PHONE	55528630
EMAIL	j.wang@griffith.edu.au
CAMPUS	Gold Coast Campus
BUILDING	Engineering (G09)
ROOM	1.54
CONSULTATION	For in-person consultation please send an email to fix a date & time.

Campus Convenor **Dr Mohammad Awrangjeb**	
PHONE	0737355032
EMAIL	m.awrangjeb@griffith.edu.au
HOMEPAGE	http://www.ict.griffith.edu.au/awrangjeb/
CAMPUS	Nathan Campus
BUILDING	Technology (N44)
ROOM	2.20
CONSULTATION	For in-person consultation please send an email to fix a date & time.

1.4 Timetable

Timetables are available on *the Programs and Courses website*.

NB: Details contained in this section of the course profile and section 4.1 Learning Activities are to be read in conjunction with the official class timetable. The published class timetable which is the authoritative source for timetabling information for all campuses can be located by clicking on the link above.

Additional Timetable Information

In regular trimester offer, attendance to weekly lectures (2 hours each) and workshops/labs (2 hours each) is mandatory for students.

1.5 Lecture Capture

It is standard practice at Griffith University that lectures timetabled in lecture capture-enabled venues are recorded and made available to students on the relevant course site, in accordance with the University's Lecture Capture Policy.

The lecture series delivered as part of this course will be recorded and accessible via the Learning@Griffith course site.

2. Aims, Outcomes & Graduate Attributes

2.1 Course Aims

Data is considered as the most important asset for any business organisations. It is often mentioned that organisations who do not recognise the importance of data management are less likely to survive in the contemporary economy. Therefore, it is indispensable to appreciate the significance of data management in organisations.

This course provides students with a hands-on exposure to data management through relational database design, implementation and management. It aims to develop the knowledge and skills necessary for the effective management of data using a relational database. In particular, this course aims at providing students with:

- In-depth knowledge of data, data models and relational database concepts,
- Principles and tools for relational database design,
- Skills to analyse real-world problems and build logical data schema,

- Skills to use SQL for implementation of a database and managing data within it, and
- Basic knowledge of indexes, transactions, and backup and recovery.

2.2 Learning Outcomes

After successfully completing this course you should be able to:

1 Explain the benefits of the database approach in data management, and the key concepts in the relational model.

2 Apply relational database design tools and principles to design a good database schema.

3 Demonstrate the normalisation techniques to remove different data anomalies including data redundancy from relational database tables.

4 Implement a database using the Structured Query Language (SQL) and manipulate data held in the database using SQL.

5 Explain the basic concepts in data storage and indexes, transaction and concurrency control, backup and recovery, data warehousing, big-data and non-traditional databases.

2.3. Graduate Attributes

For further details on the Griffith Graduate please click here

Griffith University prepares influential graduates to be:

- Knowledgeable and skilled, with critical judgement
- Effective communicators and collaborators
- Innovative, creative and entrepreneurial
- Socially responsible and engaged in their communities
- Culturally capable when working with First Australians
- Effective in culturally diverse and international environments

This table demonstrates where each of the Griffith Graduate Attributes is taught, practised and assessed in this course.

For further details on the Griffith Graduate Attributes please refer to The Griffith Graduate policy.

University wide attributes

GRADUATE ATTRIBUTE	TAUGHT	PRACTISED	ASSESSED
Knowledgeable and skilled, with critical judgement	•	•	•
Effective communicators and collaborators	•	•	
Innovative, creative and entrepreneurial	•	•	•

Additional Course Information on Graduate Attributes

Course Program Learning Outcomes

1. ICT problem solving - knowledge of how to use modelling methods and processes to understand problems, handle abstraction and design solutions.

2. Technology resources - hardware and software fundamentals, data and information management, and networking.

Australian Computer Society (ACS) Accreditation Course Status

1. ACS Core Body of Knowledge Mappings: Bloom's Levels

Abstraction (Application); Design (Application); Programming Data (Application); Information management (Application)

2. SFIA6 Skill: Systems design, Level 3

Specifies user/system interfaces, and translates logical designs into physical designs taking account of target environment, performance requirements and existing systems. Produces detailed designs and documents all work using required standards, methods and tools, including prototyping tools where appropriate.

3. ACS Complex Computing Characteristics

- Involves wide-ranging or conflicting technical, computing, and other issues
- Has no obvious solution, and requires conceptual thinking and innovative analysis to formulate suitable abstract models
- A solution requires the use of in-depth computing or domain knowledge and an analytical approach that is based on well-founded principles
- Is a high-level problem possibly including many component parts or sub-problem
- Identification of a requirement or the cause of a problem is ill defined or unknown

3. Learning Resources

3.1 Required Resources

Details of your Required Learning Resources are available from the Reading List.

3.2 Recommended Resources

Details of your Recommended Learning Resources are available from the Reading List.

3.3 University Learning Resources

The University provides many facilities and support services to assist students in their studies. Links to information about University support resources that are available to students are included below for easy reference.

[Readings](#) - New online service enabling students to access Required and Recommended Learning resources. It connects to the library catalogue to assist with quickly locating material held in Griffith libraries and enables students to manage and prioritise their readings, add personal study notes and export citations.

[Learning@Griffith](#) - there is a dedicated website for this course via the Learning@Griffith at myGriffith.

[Academic Integrity Tutorial](#) - this tutorial helps students to understand what academic integrity is and why it matters. You will be able to identify types of academic misconduct, understand what skills you will need in order to maintain academic integrity, and learn about the processes of referencing styles.

[Student Services](#) provides a range of services to support students throughout their studies including personal support such as Counselling and Health Services; Academic support; and Financial and Welfare support.

[Careers and Employment Service](#) can assist all enrolled students and recent graduates with career direction, course uncertainty, interview preparation, job search tips, LinkedIn reviews and much more. Our [Unitemps Recruitment Service](#) can assist you with finding paid casual work while you study.

[Information Services (Study)](#) provides academic, information and digital skills support resources. The study skills resources on this website include self-help tasks focusing on preparing for your assignment, writing your assignment, exam preparation, referencing and access to free online training to improve your digital skills.

[Support for learning](#) - the University provides access to common use computing facilities for educational purposes.

[Code of Practice](#) - Griffith Information Technology Resources.

4. Teaching & Learning Activities

4.1 Learning Activities

Gold Coast Campus

Week Commencing	Activity	Learning Outcomes
25 Feb 19	**Introduction to database systems (Lecture):**	1
4 Mar 19	**The Relational Model & Database Languages (Major Study Lesson):**	1, 2
13 Mar 19	**Structured Query Language (SQL)- part I (Major Study Lesson):**	1, 4
18 Mar 19	**Structured Query Language (SQL)- Part II (Major Study Lesson):**	1, 4
25 Mar 19	**Structured Query Language (SQL)- Part III (Major Study Lesson):**	1, 4
1 Apr 19	**Entity Relationship Modeling- Part I (Major Study Lesson):**	2
8 Apr 19	**Entity Relationship Modeling- Part II (Major Study Lesson):**	1, 4
29 Apr 19	**Functional Dependency & Normalization -Part I (Major Study Lesson):**	2, 3
6 May 19	**Functional Dependency & Normalization -Part II (Major Study Lesson):**	2, 3
13 May 19	**Data Storage and Indexes (Major Study Lesson):**	1, 5
20 May 19	**Advanced topics (Major Study Lesson):** Transactions and Concurrency Control, Database Backup and Recovery, NoSQL Systems.	1, 5

Nathan Campus

Week Commencing	Activity	Learning Outcomes
25 Feb 19	**Data and database models (Major Study Lesson):** What are data, a database and a DBMS? What are data models and database schema?	1, 2
4 Mar 19	**Relational Database (Major Study Lesson):** The Relational Data Model, Entity Relationship Diagram (ERD), ERD from business rules	1, 2
13 Mar 19	**Entity Relationship Model (Major Study Lesson):** Developing appropriate logical ERD, Converting ERD into a relation, M:N relationships, Supertype and subtype	1, 2
18 Mar 19	**Functional Dependency & Normalisation (Major Study Lesson):** Purpose of normalisation, functional dependency	1, 2, 3
25 Mar 19	**Normal forms & relational database schema (Audit):** Step-by-step procedure for normalisation, data types, relational database schema	1, 2, 3
1 Apr 19	**Relational Model & Structured Query Language (SQL) (Major Study Lesson):** Simple SQL statements, constraints	1, 2, 3, 4
8 Apr 19	**Structured Query Language (SQL) (Major Study Lesson):** Retrieve data from a database, SELECT statement and WHERE clause	1, 2, 4
22 Apr 19	**Advanced Structured Query Language (SQL) (Major Study Lesson):** SQL functions, group functions, GROUP BY clause, joining two or more tables, subqueries	1, 2, 4
29 Apr 19	**Data Storage and Indexes (Major Study Lesson):** Index, view & security	1, 2, 4
6 May 19	**Advanced Topic 1 (Major Study Lesson):** Transaction and concurrency, concurrency control, backup and recovery	4, 5
13 May 19	**Advanced Topic 2 (Major Study Lesson):** Big data, NoSQL, etc.	5
20 May 19	**Revision (Major Study Lesson):** For final exam	1, 2, 3, 4, 5

4.2 Other Teaching and Learning Activities Information

• The schedule in Section 4.1 above is tentative, and may be subject to major/minor adjustment.
• A major study lesson usually consists of a lecture, a laboratory and/or a workshop.
• If a lecture or tutorial class is scheduled on a public holiday (or is cancelled for any unexpected reason), this class will normally not be re-scheduled.
• Week 10: Monday 6 May (Labour Day) note: Because this is the second public holiday of the year to fall on a Monday during the teaching weeks, the University shall declare Tuesday (7 May) to be Monday (in other words, Monday classes are to run on Tuesday 7 May and Tuesday classes to be cancelled).

5. Assessment Plan

5.1 Assessment Summary

This is a summary of the assessment in the course. For detailed information on each assessment, see **5.2 Assessment Detail** below.

ASSESSMENT TASK	DUE DATE	WEIGHTING	MARKED OUT OF	LEARNING OUTCOMES	MAXIMUM EXTENSION PERIOD
Test or quiz Test (Short QA)	11 Mar 19 - 24 May 19	20%	20 marks	1, 2, 3, 4	
Assignment - Written Assignment Assignment	1 Apr 19 - 24 May 19	30%	30 marks	1, 2, 3, 4	
Exam - constructed response Final Exam	Examination Period	50%	50 marks	1, 2, 3, 4, 5	

5.2 Assessment Detail

Title: Test (Short QA)
Type: Test or quiz
Learning Outcomes Assessed: 1, 2, 3, 4
Due Date:
    11 Mar 19 - 24 May 19
Weight: 20%
Marked out of: 20
Task Description:

This is a diagnosis or formative assessment item that will test your understanding and capacity to apply and critically evaluate the concepts learned in the class.

These tests will be based on short question and answer and held in Lecture(s) or Workshop/Lab(s). The detail will be announced by the course convenor once the semester starts.

During these assessments dates, each **student should be present** in his/her lecture / workshop / lab in which he/she is officially enrolled in to attend the tests.

Criteria & Marking:

Each question will carry a number of marks that will be awarded if the question is answered correctly

Submission: Attend and submit during Lecture(s) or Workshop/Lab(s) of specific weeks.

This assessment item:
- is a school based activity
- is an individual activity
- does not include a self assessment activity
- does not have a re-attempt provision

Title: Assignment
Type: Assignment - Written Assignment
Learning Outcomes Assessed: 1, 2, 3, 4
Due Date:
        1 Apr 19 - 24 May 19
Weight: 30%
Marked out of: 30
Task Description:

This summative assessment task will assess your capability to design a simple but practical relational database using ER-diagram, and analyse it using normal form theory. The implementation of the database will be using the Structured Query Language (SQL).

Criteria & Marking:

Each part of the assignment will be assigned certain marks that will be awarded depending on the proportion of the task that is successfully completed and the quality of the solution.

Submission: Submit online

This assessment item:
- is a school based activity
- is a group activity
- does not include a self assessment activity
- does not have a resubmission provision

Title: Final Exam
Type: Exam - constructed response
Learning Outcomes Assessed: 1, 2, 3, 4, 5
Due Date:
        Examination Period
Weight: 50%
Marked out of: 50
Perusal: 10 minutes
Duration: 120 minutes
Format: Closed Book
Task Description:

This is a summative assessment task that tests your capacity to understand, apply, analyse and critically evaluate the concepts taught in this course.

Criteria & Marking:

Each question will carry a number of marks that will be granted should the question be answered correctly.

This assessment item:
- is a centrally organised activity
- is an individual activity
- does not include a self assessment activity

5.3 Late Submission

An assessment item submitted after the due date, without an approved extension from the Course Convenor, will be penalised. The standard penalty is the reduction of the mark allocated to the assessment item by 10% of the maximum mark applicable for the assessment item, for each working day or part working day that the item is late. Assessment items submitted more than five working days after the due date are awarded zero marks.

5.4 Other Assessment Information

Griffith University Disclosure Statement

The University shall provide reasonable adjustments to assessment for students with disabilities consistent with the Disabilities Standards for Education 2005, while maintaining the academic integrity of its programs. Adjustments shall be made on an individual basis. Please refer to this policy as it sets out the principles and processes that guide the University Reasonable Adjustments for Assessment - Students with Disabilities

Supplementary Assessment is available in this course in accordance with Section 8 of the University Assessment Policy. To achieve a Pass grade for the course a pass mark for the supplementary assessment item must be achieved.

Final Grades

A student's final grade for this course will be based on the aggregation and weighting of marks across assessment, any mandatory pass components and grade cut-offs. Grade cut-offs can vary, so you will need to wait for the official release of grades to be sure of your grade for this course.

- This course is a graded course (i.e 7, 6, 5, 4, 3, 2, 1).
- To be eligible to pass the course, students are required to **attempt ALL assessment types**, and obtain satisfactory marks (**at least 20 out of 50**) in the **final exam**.
- The feedback on each assessment item during the semester will likely be available after 1 week of the assessment submission. It can be in-person by returning the marked assessment, or online via the mark centre at L@G.

6. Policies & Guidelines

This section contains the details of and links to the most relevant policies and course guidelines. For further details on University Policies please visit the Policy Library

6.1 Assessment Related Policies and Guidelines

University Policies & Guidelines

The University's assessment-related policies can be found in the Griffith Policy Library.

The Assessment policy covers topics including: assessment requirements; award of grades; supplementary assessment; special consideration; extensions and deferred assessment; conduct of students in examinations; cheating; plagiarism; notification of results; appeals against the award of grades.

Academic Integrity

Student academic misconduct encompasses all behaviour:

- involving the misrepresentation of academic achievement; or
- undermining the core values (honesty, trust, fairness, respect and responsibility) of academic integrity; or
- breaching academic integrity;

whether intentional or unintentional. Student academic misconduct includes doing as well as attempting to do any of the acts, omissions or things that constitute academic misconduct.

Student academic misconduct is defined in the Institutional Framework for Promoting Academic Integrity among Students.

Please also refer to the Student Academic Misconduct Policy.

Reasonable Adjustments for Assessment - Students with Disabilities Policy

The Reasonable Adjustments for Assessment - Students with Disabilities Policy sets out the principles and processes that guide the University in making reasonable adjustments to assessment for students with disabilities while maintaining the academic integrity of its programs.

Griffith University Disclosure Statement

The Griffith University Disclosure Statement has been developed to identify and negotiate whether necessary and reasonable accommodations and adjustments can be made, wherever possible, to enable students with disabilities and/or health conditions to undertake required learning activities. Course Convenors are encouraged to reference the Griffith University Disclosure Statement in the Learning Activities and Assessment Plan sections of their course profiles.

Assessment, how to submit an assignment and exams, viewing your grades

All you need to know about assessment, exams and grades

Text Matching Software

The University uses text matching software. Students should be aware that your Course Convenor may use software to check submitted assessment tasks. If this is the case, your Course Convenor will provide more detailed information about how the software will be used for individual assessment items.

Related links:

- Academic Integrity website
- Academic Standing, Progression and Exclusion Policy
- Assessment Policy
- Assessment Submission and Return Procedures
- End of Trimester Centrally Administered Examinations Policy and Procedures
- Governance of Assessment and Academic Achievement Standards
- Standards for First Year Assessment
- Institutional Framework for Promoting Academic Integrity among Students
- Student Academic Misconduct Policy

6.2 Other Policies and Guidelines

University Policies and Guidelines

Students are responsible for ensuring that they have read all sections of the Course Profile for the course/s in which they are enrolled in any enrolment period. The published online version of the Course Profile is the authoritative version and by the publication of the Course Profile online, the University deems the student has been notified of and read the course requirements. Variations to the Course Profile during the trimester of offer are not permitted except in exceptional circumstances and will be advised in writing to all enrolled students and via the *Learning@Griffith* website. Additional information regarding the content of this course may be published on the *Learning@Griffith* website.

Copyright matters

Copyright applies to all teaching materials and materials generated by students which substantially relate to Griffith University courses. *Students are warned against selling Griffith University teaching materials and their student notes online through commercial websites during and after their*

studies. You will almost certainly be in breach of copyright law and Griffith's IT Code of Practice if you post these materials on the internet and commercial websites. Please refer to the Copyright Guide for Students for further information.

Health and Safety

Griffith University is committed to providing a safe work and study environment. However, all students, staff and visitors have an obligation to ensure the safety of themselves and those whose safety may be affected by their actions. Staff in control of learning activities will ensure as far as reasonably practical, that those activities are safe and that all safety obligations are being met. Students are required to comply with all safety instructions and are requested to report safety concerns to the University.

General health and safety information is available on the Health, Safety and Wellbeing website.

Other Key Student-Related Policies

All University policy documents are accessible to students via the Griffith Policy Library and links to key policy documents, in addition to those listed in 6.1 above, are included below for easy reference:

- Student Communications Policy
- Health and Safety Policy
- Student Administration Policy
- Student Charter
- Student Review and Appeals Policy
- Student Review and Appeals Procedures
- Student Complaints Policy

Other Course Guidelines

Students should refer to the course's Learning@Griffith site for further information about this course.

Learning Summary

Below is a table showing the relationship between the learning outcomes for this course, the learning activities used to develop each outcome and the assessment task used to assess each outcome.

Learning Outcomes

After successfully completing this course you should be able to:

1 Explain the benefits of the database approach in data management, and the key concepts in the relational model.
2 Apply relational database design tools and principles to design a good database schema.
3 Demonstrate the normalisation techniques to remove different data anomalies including data redundancy from relational database tables.
4 Implement a database using the Structured Query Language (SQL) and manipulate data held in the database using SQL.
5 Explain the basic concepts in data storage and indexes, transaction and concurrency control, backup and recovery, data warehousing, big-data and non-traditional databases.

Assessment & Learning Activities

LEARNING ACTIVITIES	LEARNING OUTCOMES				
	1	2	3	4	5
Introduction to database systems (Lecture)	●				
The Relational Model & Database Languages (Major Study Lesson)	●	●			
Structured Query Language (SQL)- part I (Major Study Lesson)	●			●	
Structured Query Language (SQL)- Part II (Major Study Lesson)	●			●	
Structured Query Language (SQL)- Part III (Major Study Lesson)	●			●	
Entity Relationship Modeling- Part I (Major Study Lesson)		●			
Entity Relationship Modeling- Part II (Major Study Lesson)	●			●	
Functional Dependency & Normalization -Part I (Major Study Lesson)		●	●		

LEARNING ACTIVITIES	LEARNING OUTCOMES				
	1	2	3	4	5
Functional Dependency & Normalization -Part II (Major Study Lesson)		●	●		
Data Storage and Indexes (Major Study Lesson)	●				●
Advanced topics (Major Study Lesson)	●				●
Data and database models (Major Study Lesson)	●	●			
Relational Database (Major Study Lesson)	●	●			
Entity Relationship Model (Major Study Lesson)	●	●			
Functional Dependency & Normalisation (Major Study Lesson)	●	●	●		
Normal forms & relational database schema (Audit)	●	●	●		
Relational Model & Structured Query Language (SQL) (Major Study Lesson)	●	●	●	●	
Structured Query Language (SQL) (Major Study Lesson)	●	●		●	
Advanced Structured Query Language (SQL) (Major Study Lesson)	●	●		●	
Data Storage and Indexes (Major Study Lesson)	●	●		●	
Advanced Topic 1 (Major Study Lesson)				●	●
Advanced Topic 2 (Major Study Lesson)					●
Revision (Major Study Lesson)	●	●	●	●	●
ASSESSMENT TASKS					
Test (Short QA)	●	●	●	●	
Assignment	●	●	●	●	
Final Exam	●	●	●	●	●

Graduate Attributes

For further details on the Griffith Graduate please click here

Griffith University prepares influential graduates to be:

- Knowledgeable and skilled, with critical judgement
- Effective communicators and collaborators
- Innovative, creative and entrepreneurial
- Socially responsible and engaged in their communities
- Culturally capable when working with First Australians
- Effective in culturally diverse and international environments

This table demonstrates where each of the Griffith Graduate Attributes is taught, practised and assessed in this course.

University wide attributes

GRADUATE ATTRIBUTE	TAUGHT	PRACTISED	ASSESSED
Knowledgeable and skilled, with critical judgement	•	•	•
Effective communicators and collaborators	•	•	
Innovative, creative and entrepreneurial	•	•	•
Socially responsible and engaged in their communities			
Culturally capable when working with First Australians			
Effective in culturally diverse and international environments			